

# XML and Healthcare

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HL7 Australia Conference

26 March 2004

# Overview

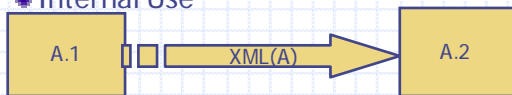
- Proprietary/Adhoc XML
- HL7 v2.xml
- HL7 v3 XML
- openEHR XML
- CDA
- Conclusions
- Questions

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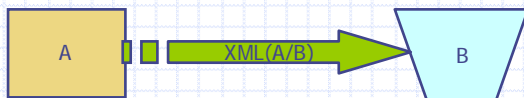
# Proprietary/Adhoc XML

## • Internal Use



## • Adhoc agreement

- Once off
- Small number of participants



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# Proprietary Examples

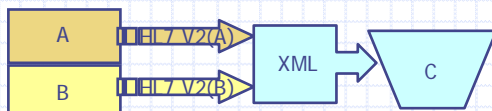
- Store data in databases
  - XML data stores
  - Blobs in relational database
- Store Knowledge
  - Therapeutics for publishing
  - Reference Models (HL7 V3, openEHR)
- Messaging
- Forms

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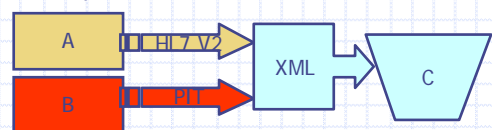
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# Intermediate Formats

## ■ Buffering between different data models



## ■ Buffering between different implementation of the same data model



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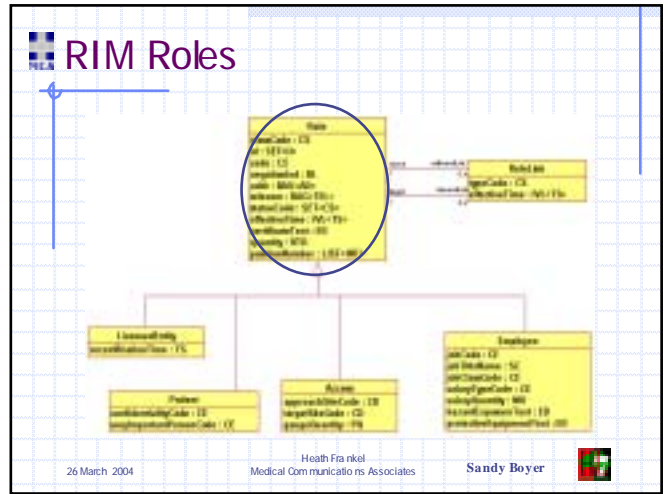
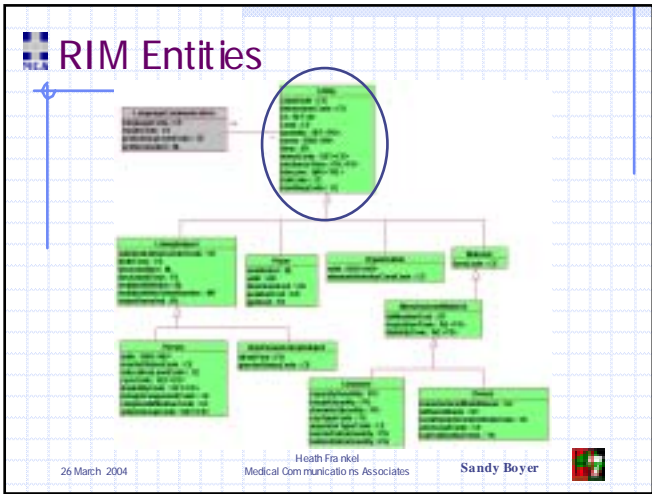
# Proprietary Patient XML

```
<Patient xmlns:xsd="http://www.w3.org/2001/XMLSchema"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-
instance"
xmlns="http://medcom.com.au/hs2/hs2ws/"
id="00021" facilityID="TQEH">
<name>
<familyName>Andrews</familyName>
<givenName>Mary</givenName>
<middleName>Elizabeth</middleName>
</name>
<gender>F</gender>
<dateOfBirth value="19580319" />
<medicareNum>5011841873</medicareNum>
</Patient>
```

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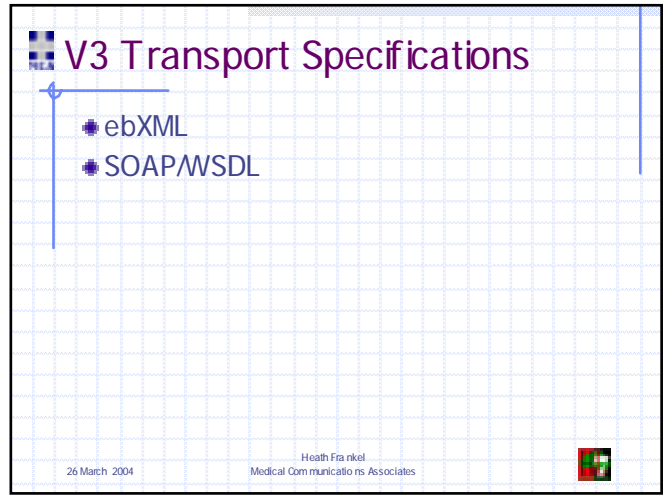


## HL7 V3 Patient CMET

```

<Observation xmlns="urn:hl7-org:v3"
  xmlns:xsi="http://www.w3.org/2002/XMLSchema-
  instance">
  <...>
  <subject>
  <COCT_MT050000.Patient>
  <id root="2.16.840.1.113883.2.3.1.1"
  extension="00021"/>
  <id root="2.16.840.1.113883.2.3.1"
  extension="5011841873"/>
  <patientPerson>
  <name use="L" xsi:type="PN">
  <family>Andrews</family>
  <given>Mary</given>
  </name>
  <administrativeGenderCode code="F"/>
  <birthTime>1958-03-
  19T00:00:00</birthTime>
  </patientPerson>
  </COCT_MT050000.Patient>
  </subject>
  </Observation>
  
```

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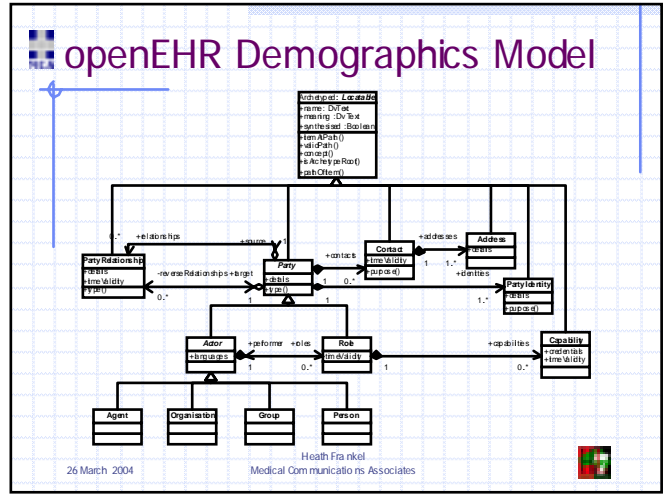


## openEHR XML Specifications

- Removed from Abstract Specifications
- Service Model Draft

Note: openEHR XML presented within presentation is representative ONLY!

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## Patient Role

```
<Role>
  <name><value>patient</value></name>
  <meaning>person role</meaning>
  <details xsi:type="SingleS">
    <name><value>patient ID</value></name>
    <meaning>patient ID</meaning>
    <representation xsi:type="Element">
      <name><value>item</value></name>
      <meaning>item</meaning>
      <value xsi:type="DvText">
        <value>00021</value>
      </value>
    </representation>
  </details>
  <...>
</Role>
```

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## Patient Credentials

```
<capabilities>
  <capability>
    <name><value>medicare</value></name>
    <meaning>medicare</meaning>
    <credentials xsi:type="SingleS">
      <name><value>medicare nr</value></name>
      <meaning>medicare nr</meaning>
      <representation xsi:type="Element">
        <name><value>item</value></name>
        <meaning>item</meaning>
        <value xsi:type="DvText">
          <value>5011841873</value>
        </value>
      </representation>
    </credentials>
  </capability>
</capabilities>
```

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## Patient Performer

```
<performer xsi:type="Person">
  <name><value>Mary Andrews</value></name>
  <meaning>person</meaning>
  <details xsi:type="ListS">
    <name><value>person</value></name>
    <meaning>person</meaning>
    <representation xsi:type="Cluster">
      <name><value>items</value></name>
      <meaning>items</meaning>
      <items>
        <item xsi:type="Element">
          <name><value>gender</value></name>
          <meaning>gender</meaning>
          <value
            xsi:type="DvText"><value>F</value></value>
          </item>
        <item xsi:type="Element">
          <name><value>date of birth</value></name>
          <meaning>date of birth</meaning>
          <value xsi:type="DvDate">
            <year>2095</year><month>01</month><day>19</day>
          </value>
        </item>
      </items>
    </representation>
  </details>
</performer>
```

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## Person Identity

```
<identities>
  <partyIdentity>
    <name><value>legal name</value></name>
    <meaning>person name</meaning>
    <details xsi:type="ListS">
      <name><value>person name</value></name>
      <meaning>person name</meaning>
      <representation xsi:type="Compound">
        <name><value>items</value></name>
        <meaning>items</meaning>
        <items>
          <item xsi:type="Element">
            <name><value>first name</value></name>
            <meaning>first name</meaning>
            <value
              xsi:type="DvText"><value>Mary</value></value>
            </item>
          <item xsi:type="Element">
            <name><value>family name</value></name>
            <meaning>family name</meaning>
            <value
              xsi:type="DvText"><value>Andrews</value></value>
            </item>
        </items>
      </representation>
    </details>
  </partyIdentity>
</identities>
```

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## HL7 CDA

- The CDA is a document markup standard for the structure and semantics of exchanged "clinical documents"
- Clinical Documents have the following characteristics:
  - Persistence
  - Stewardship
  - Potential for authentication
  - Context
  - Wholeness
  - Human readability
- A CDA document is a defined and complete information object that can exist outside of a message, and can include text, images, sounds, and other multimedia content.

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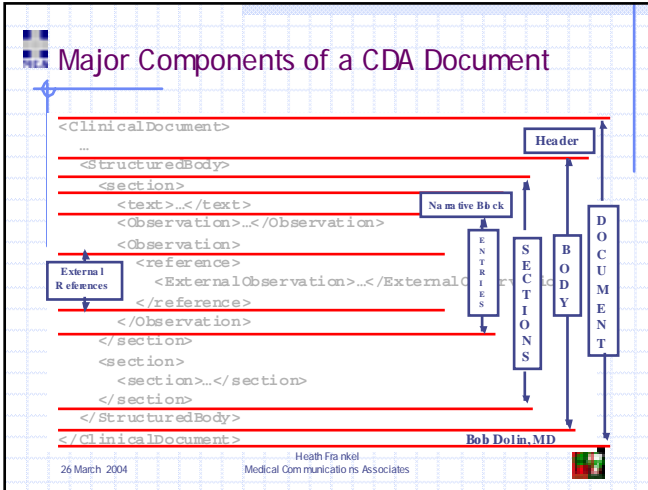
## HL7 CDA Key Aspects

- CDA documents are encoded in Extensible Markup Language (XML).
- CDA documents derive their meaning from the HL7 Reference Information Model (RIM).
- The CDA specification is richly expressive and flexible. Templates and implementation guides can be used to constrain the generic CDA specification.

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### CDA Header

```

<ClinicalDocument>
  <id externalOn="0266" root="2.16.840.1.113883.3.933"/>
  <code code="11498-4" codeSystem="&LOINC;" displayName="Consultation note"/>
  <title>Good Health Clinic Consultation Note</title>
  <effectiveTime value="20000407"/>
  <custodian><assignedCustodian><representedOrganization>
    <id extension="M345" root="2.16.840.1.113883.3.933"/>
    <name>Good Health Clinic</name>
  </representedOrganization></custodian>
  <recordTarget><patientRole>
    <id extension="12345" root="2.16.840.1.113883.3.933"/>
    <patientPatient>
      <name>
        <given>Henry</given><family>Levin</family><suffix>the 7th</suffix>
      </name>
      <administrativeGenderCode code="M" codeSystem="2.16.840.1.113883.5.1"/>
      <birthTime value="19320924"/>
    </patientPatient></patientRole></recordTarget>
  <componentID><component>
    <id extension="KPEM1332" root="2.16.840.1.113883.3.933"/>
    <effectiveTime value="20000407"/>
    <encounterPerformer typeCode="CIN"><assignedEntity>
      <id extension="KPO017" root="2.16.840.1.113883.3.933"/>
      <assignedPerson>
        <name><given>Robert</given><family>Dolin</family><suffix>MD</suffix></name>
        </assignedPerson></assignedEntity></encounterPerformer>
      </component>
    </componentID>
  </componentID>
  </ClinicalDocument>
  
```

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### CDA Body, Section, Narrative Block

```

<component><bodyChoice>
  <StructuredBody>
    <component>
      <section>
        <code code="11496-7" codeSystem="&LOINC;" />
        <title>Assessment</title>
        <text>
          <list>
            <item>Asthma, with prior smoking history.
              Difficulty weaning off steroids.</item>
            <item>Hypertension, well-controlled.</item>
            <item>Contact dermatitis on finger.</item>
          </list>
        </text>
        <entry><entryChoice>
          <Observation> ... </Observation>
        </entryChoice></entry>
      </section>
    </component>
  </StructuredBody>
</bodyChoice></component>
  
```

Bob Dolin, MD

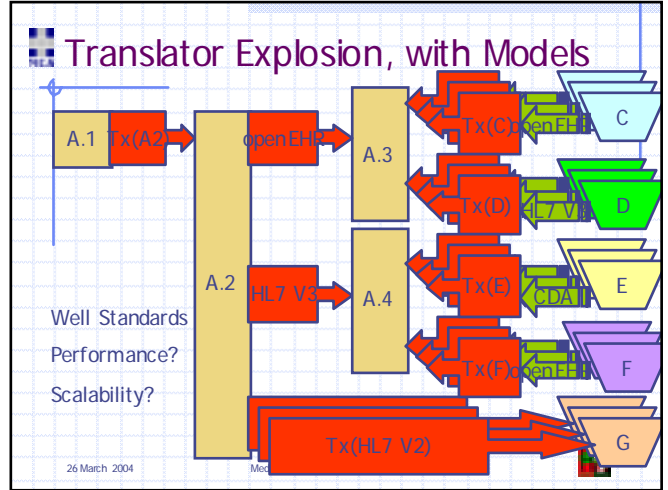
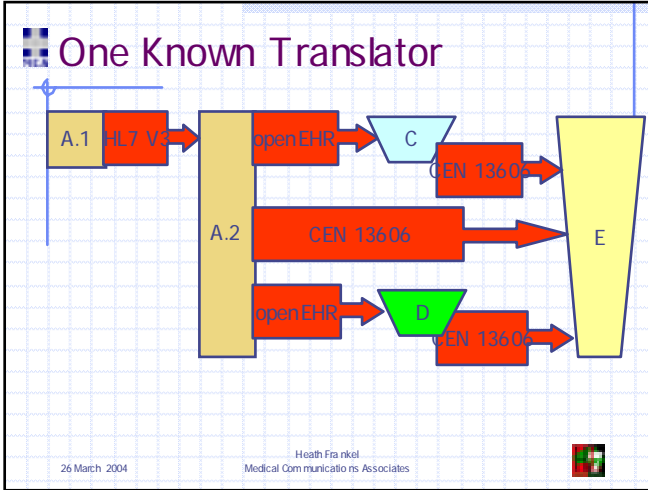
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### To Model or not to Model?

For interoperability...  
even with XML...

There is no question!

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## Translation... WHY!

- How many models?
  - ONE PLEASE!
- Which Model?
  - I don't care...
  - JUST ONE!
  - OK ... maybe two
  - OK ... maybe ...

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## Tag Names, Do they matter

- NO !
- But XML is Readable
  - By Humans ... Really? Why?
  - Yeah by computers
- Do they add semantics to data?
  - NO!
  - That's the model
- Just generate the Tag names, Schema's
  - From object classes implement using Model
  - From object models

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## Demographic Archetypes?

- Start from scratch
- Use CEN GPICs
- Use HL7 Datatypes
  - e.g. (X)AD, (X)PN, (X)TN/TEL
  - Exist and proven
  - Easier to translate
- NHDD?
- Others?

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## Questions?

Thankyou

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